REMARKS

Reconsideration of this application is respectfully requested.

I. Status of the Claims

Claims 5-8 and 14-17 are cancelled without prejudice or disclaimer of the subject matter therein.

Claims 3 and 12 have been amended and no new matter is added.

Claims 1-4, 9-13 and 18 are pending.

II. Status of the Specification

The Specification has been amended to correctly refer to the Japanese patent reference. This amended paragraph adds no new matter.

III. Allowable Subject Matter

Applicants would like to thank the Examiner for the indicated of allowable subject matter in claims 3 and 12. The Examiner indicated that there is evidence in the Specification for the misfit values between lattice constants of approximately +3%.

However, the Examiner contends that misfit values of approximately -3% are not supported in the Specification and cannot be included in claims 3 and 12. The applicable standard as to whether a particular claim is supported by the specification is whether the specification contains sufficient information regarding the subject matter of the claims as to enable one skilled in the p-pertinent art to make and use the claimed invention without undue experimentation. *See,* MPEP § 2164.

Applicants respectfully submit that the Specification enables one skilled in the art to adjust the lattice constant achieve a range of misfit values between approximately +3% to -3%. (*See,* Specification, page 13, line 19 though page 14, line 5 and page 15, line 26 through page 16, line 6). Further, the evidence of the misfit values obtained shows that excellent coercivity and signal to noise ratio are achieved where the misfit between the lattice constants is small. (*See,* Specification

page 19, table 1 and lines 12-13; page 21, table 2 and lines 13-15). Therefore, the Specification provides sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention without undue experimentation. Applicants respectfully request the Examiner to allow the subject matter of claims 3 and 12 for a misfit value of ± 3 %.

IV. Rejections Under 35 U.S.C. § 103 (a)

Claims 1, 9, 10, and 18 have been rejected under 35 USC §103(a) as unpatentable over the admitted state of the prior art, or U.S. Patent No. 5,679,473 to Murayama et al. (hereinafter "Murayama") in view of U.S. Patent No. 6,403,203 to Futamoto et al. (hereinafter "Futamoto"), U.S. Patent No. 6,146,755 to Guha et al. (hereinafter "Guha") or U.S. Patent No. 5,846,648 to Chen et al. (hereinafter "Chen").

The Examiner has also rejected claims 3, 4, 12 and 13 under 35 U.S.C. § 103(a) as unpatentable over the admitted state of the prior art or Murayama in view of Futamoto, Guha or Chen, and further in view of either U.S. Patent No. 6,150,015 to Bertero et al. (hereinafter "Bertero") or U.S. Patent No. 6,610,424 to Acharya et al. (hereinafter "Acharya").

The Examiner contends either the admitted prior art or Murayama teaches a magnetic recording medium having a non-ferric oxide underlayer in which magnetic grains are segregated by a non-magnetic oxide. The Examiner admits that neither the admitted prior art nor Murayama show a first and second non-magnetic metallic intermediate layer, with the first non-magnetic metallic intermediate layer composed of an oxide of any of Re, Ru, Os and the second layer composed of a CoCr allow and any of Nb, Mo, Ru, Rh, Pd, Ta, W, Re, Os, Ir or Pt.

The Examiner relies on Futamoto to teach first and second intermediate layers in a magnetic recording medium. The Examiner states that Futamoto teaches a "first perpendicular layer" composed of CoCr with Pt. The Examiner admits that Futamoto does not teach the intermediate layer composed of an oxide of any Re, Ru, Os. The Examiner relies on Guha or Chen to show an oxide of Ru in a position adjacent to the magnetic layer.

Applicants traverse the Examiner's rejection and respectfully submit that the Examiner has not set forth a *prima facie* case of obviousness. Neither the admitted state of the prior art nor the

references teach or suggest to one of ordinary skill in the art to combine the references as contended by the Examiner.

Applicants traverse the rejection to claims 3 and 12 because none of the references disclose the hexagonal close packed crystalline structure of the second intermediate layer and the hexagonal close packed crystal structure of the ferromagnetic grains in the magnetic layer and the specific misfit values between the intermediate layer and that of the ferromagnetic grains, as well as for reasons stated below. Applicants respectfully request the Examiner withdraw the rejection to these claims.

Regarding the independent claims, the admitted state of the prior art has not achieved the present levels for noise reduction. Specifically, the admitted state of the prior art fails to teach or suggest to one of ordinary skill in the art the precise control of the structure of the magnetic grains of the present invention and the use of a plurality of intermediate layers on an underlayer prior to laminating the magnetic layer to achieve more reduction of noise or the particular composition of the intermediate layers as claimed in the present invention.

Murayama does not disclose or suggest further controlling the structure of the nonmagnetic layers to control the crystal orientation of the granular magnetic layer. Murayama actually teaches away from the present claimed invention by stating "the present inventors have studied the control of the crystal grain structure of the magnetic film by an underlayer. However, the desired properties of high coercivity and improved media noise were never obtained." (Murayama, col. 5, lines 46-50). Therefore, Murayama does not teach or suggest to one of ordinary skill in the art to combine Murayama with Futamoto, Chen or Guha to achieve the present invention.

Regarding Futamoto, the Examiner contends that Futamoto teaches a "first perpendicular layer" layer of CoCr with Pt corresponding to applicants second intermediate layer and refers to Table 1 of Futamoto. However, in contrast, Futamoto teaches a CoCrPt first perpendicular magnetic layer (*See*, Futamoto, col. 4) and not a CoCrPt non-magnetic layer as presently claimed. The "first perpendicular film" reference in Table 1 of Futamoto refers to the first perpendicular magnetization film. (*See*, Futamoto, col. 10, lines 5-6). Futamoto teaches:

> the effective way to further reduce the medium noise is to provide on the first perpendicular magnetization film of Co-based alloy a second magnetization film of which the magnetic exchange coupling force in

> the longitudinal direction is greater than that of the first perpendicular magnetization film

(Futamoto, col 4, lines 57-63). Futamoto does not teach the use of a CoCrPt layer to promote the epitaxial grain growth of the magnetic layer. Futamoto actually teaches the use of CoCrPt as the magnetic layer in combination with other magnetic layers. This is in contrast to the claims which recite the "second non-magnetic metallic intermediate layer...being at least a CoCr alloy including...Pt."

Regarding Chen, the Examiner contends that Chen shows the Ru oxide in a position adjacent to the magnetic layer in an intermediate layer as the first intermediate layer. Chen teaches an Ru oxide deposited in the magnetic layer. (*See*, Chen, col. 15, lines 17-21). Chen teaches epitaxial growth of this magnetic layer upon a "nucleation layer" comprising a "seed layer"of Ti, a B2 structure such as NiAl intermetallic compound, or a Cr alloy to control the grain size of an "intermediate layer" of Cr or a Cr alloy. (*See*, Chen, col 10, lines 10-13). The "proper structured nucleation layer [is a] requirement for obtaining a superior recording layer." (Chen, col. 16, lines 21-23). Chen does not teach using the Ru oxide, as in the present invention, to control the structure of the layer upon which epitaxial growth of the magnetic layer occurs.

With regard to Guha, Guha teaches the specific use of the Ru oxide on a layer of SiO_2 for the selective area growth of a ferromagnetic material. This results in the creation of "discrete, single-domain magnetic elements uniformly distributed on the surface of a nonmagnetic disk" for ultra-high density recording. (*See*, Guha, col. 2, lines 42-44). Guha focuses only on selectively growing CrO_2 material on the Ru oxide to create the discrete-single-domain magnetic elements. (*See*, Guha, cols. 3-5). As Guha only teaches this specific embodiment, one of ordinary skill in the art is not taught or motivated to combine Guha with any of the above references to achieve the present invention.

Claims 2 and 11 have also been rejected under 35 USC §103(a) as being unpatentable over the admitted state of the prior art or Murayama in view of Futamoto and Guha or Chen, and further in view of either U.S. Patent No. 5,989,673 to Xiong et al. or U.S. Patent No. 5,626,920 to Hedgcoth.

Applicants traverse the rejections to claims 2-4 and 11-13 by stating that these claim define over the prior art based on their own recital and the reasons stated above, as well as their

dependency from the independent claims. Therefore, Applicants respectfully request the Examiner withdraw the rejections to claims 1-4, 9-13 and 18.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

If there are any other issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Dated: January 7, 2004

Respectfully submitted,

By _____

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